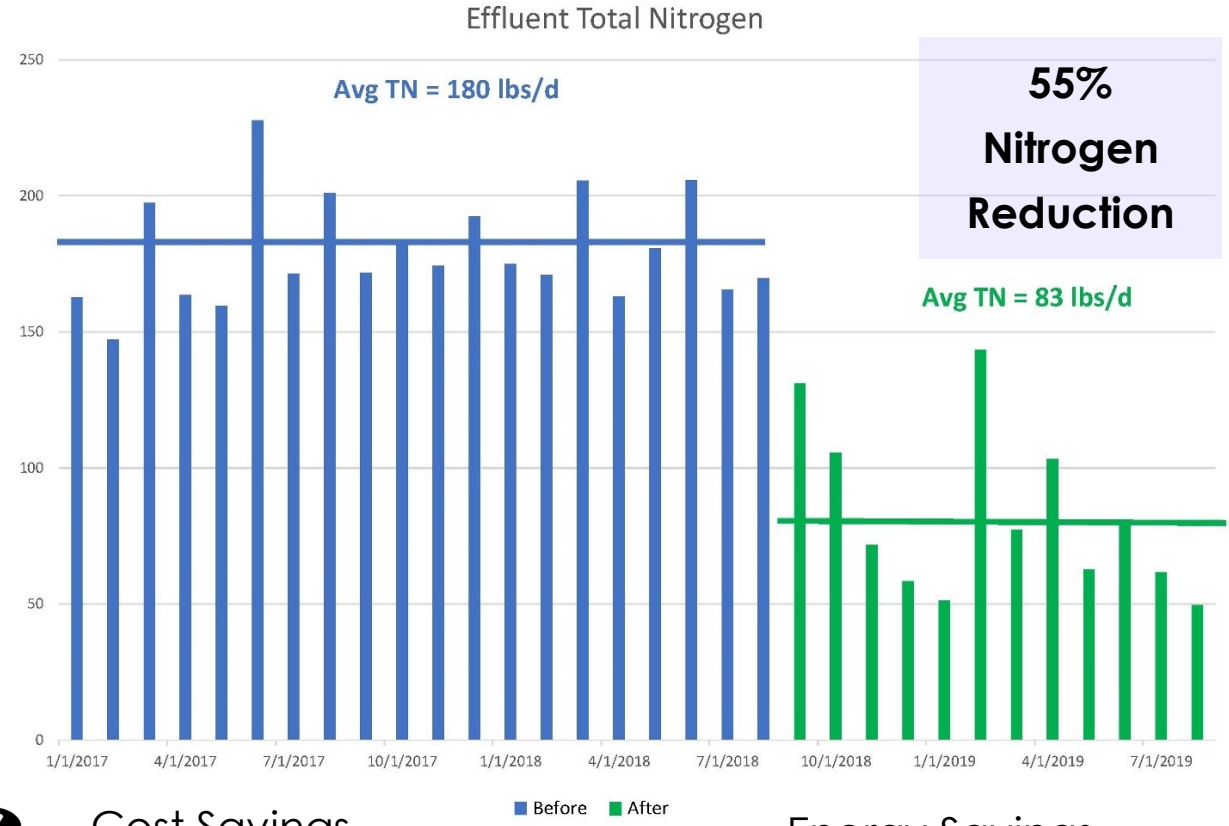
CASE STUDY: 2018-2019

Princeton Wastewater Treatment Plant Optimization

In 2015, the Kentucky Energy and Environment Cabinet (EEC) and EPA Region IV assembled a team of universities, associations, and government agencies to conduct nutrient and energy efficiency assessments for wastewater treatment plants (WWTP). EPA Region IV program funding provided these assessments at no cost to participating facilities. Each year from 2016 to 2018, three new facilities participated in the Program, receiving free nutrient and energy assessments along with recommendations on optimizing nutrient treatment. In 2017, the Princeton WWTP took part in the pilot program, using an Excel-based tool called Bio-Tiger to identify optimization opportunities.

At Princeton's 1.57 MGD facility, the Bio-Tiger model showed there was potential to improve denitrification. Instead of continual operations, the facility shut off all rotors in the three oxidation ditches for 8 hours/night and ran one of two 40-HP rotors in each ditch during the remainder of the day. Effluent total nitrogen decreased ~55%, while effluent total phosphorus decreased by ~9% without using additional chemicals. Electricity usage also decreased by 13%, which helped offset rising electricity rates. Over the course of 12 months, the Princeton WWTP eliminated **30,000 lbs** of nitrogen and **300 lbs** of phosphorus from discharging into Eddy Creek, which is impaired for nitrates and phosphorus. Nutrient load reduction to Eddy Creek ultimately benefits downstream water including the Cumberland River and the Land Between the Lakes National Recreation Area. Because of these optimization measures, Princeton saved money and improved water quality at no cost to ratepayers.



$ Cost Savings
23,000/year

Energy Savings
148,000 kWh/year

For more information, please contact :
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